THE AMERICAN ARCHITECT AND BUILDING NEWS.

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BOSTON, MARCH 11, 1876.

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THE Advisory Board appointed to report to the New Capitol Commission of the State of New York, on the condition of the new Capitol at Albany, have rendered their report, of which we give a digest in another column. They criticise the design of the Capitol architect, Mr. Fuller, with considerable freedom; presenting, at the request of the Commission, a project for the improvement of it, and detailed estimates both for completing the building according to the designs of the architect, and also according to the modifications which they themselves suggest.

In their first recommendations to the Commission, the advisers limited themselves to the preparation of slight sketches which suggested the chief alterations they recommended that the architect should make in his design; they were then instructed to prepare full drawings for comparison with those to be obtained from the architect, and detailed estimates for both. Some idea of the amount of work that was done beyond the preparation of the drawings may be got from the fact that the bills of quantities for the design, as modified by the Board, contained between six and seven thousand items; and each item may be taken to represent, on the average, a sheet of paper covered with figures.

As long ago as 1874, Mr. Fuller had prepared for the Legislative Committee an estimate of the cost of finishing the Capitol, without the fencing, grading, or furnishing. The amount of this estimate was $7,886,000. Up to the suspension of the work in last December, $1,729,000 more had been spent; and the walls had by this time been carried up to the springing of the arches on the third or principal floor. From this line upward the Advisory Board propose to modify the design of the building; and their estimate for the completion of it according to their suggestions is $4,502,000, or $1,656,000 less than remains of the estimate above mentioned after deducting the amount since expended. Of this reduction $334,000 are to be attributed to the late fall in prices, and $1,322,000 are due to the modifications proposed by the Board. Meanwhile the architect has himself suggested certain changes in his plan, and has prepared detailed drawings and specifications from which also the Advisory Board have obtained estimates for the completion of the work. This last estimate amounts to $4,827,000, which is a reduction from the unexpended amount of the first estimate of $1,330,000; in which, again, $334,000 is ascribed to the fall in prices, leaving $996,000 due to a greater economy in the design. The changes proposed by the architect are simply a reduction in height and scale of the upper parts of the building; those proposed by the Board involve a very decided remodelling of the design above the third floor.

IN an article on Trinity College, Hartford, in the March number of Scribner's Monthly, is a description, not without interest, of the buildings which have been designed for the college by Mr. Burges of London. A perspective view and plans were given some time ago in one of the English building journals, — the Building News, we think. Trinity is almost the only American college which has had the wisdom to get from an able architect a well-digested plan for a group of buildings sufficient to meet the permanent wants of a large number of students, and to prepare in advance a scheme for the harmonious design and treatment of all the buildings of which the need can be foreseen. Mr. Burges's design, of which but a small part is undertaken at present, is arranged in three large quadrangles, around which are grouped a chapel, refectory, lecture-rooms, and dormitories, treated with the bold picturesqueness and purity of style which is characteristic of his work. We should be glad if others of our colleges, our universities even, would be fore-handed enough to take a lesson from Trinity, and, before it is quite too late, secure some scheme from an architect of thorough training, by which all their buildings could be ultimately brought into harmony. Changes always come faster than they are looked for; and, even in such old institutions as Yale or Harvard, a generation makes alterations great enough to go far towards harmonizing a pretty obstinate mass of material. The English way of arranging such buildings in quadrangles has always seemed to us not not only a natural and economical one, but one very suggestive of the seclusion and repose which one looks for in a place set apart for study, and therefore architecturally very admirably fitted to express its uses. The high, detached, barrack-like buildings in which students swarm at Harvard and Yale, for instance, are quite hostile to the feeling of scholastic quiet and homelike comfort with which all visitors to Oxford and Cambridge in England are impressed. Where the problem is, how to house the greatest number of people at the smallest manageable expense, it is necessary to crowd them close, and lift them into third, fourth, and fifth stories; but this ought not to be the problem in a university.

THE Erectheum has been a standing puzzle to archæologists, chiefly from the difficulty of placing the three temples recorded in tradition — the temple of Minerva Polias, the Erectheum, and the Pandroseum — in a building which gives room for but two, being only a single cella apparently divided into two apartments, and with three open porticos attached; and of reconciling the existing remains with certain passages in the description of the buildings by Pausanias. There has been especial trouble in finding a lodgement for the nymph Pandrosus, who has been assigned by successive archæologists to almost every corner of the building. At the meeting of the Royal Institute of British Architects, on Feb. 14, Mr. Fergusson read a paper, in which he proposes the theory that the Pandroseum was not in what is now known as the Erectheum, but in a detached building, now destroyed, on the western side. The Institute has of late objected to the unofficial reports of its papers, which have been published in the English building journals; and, from the very meagre abstract of Mr. Fergusson's paper furnished to the Architect, it is difficult to deduce the reasons he gives for his theory; but the eccentrically placed doors in the western end of the northern portico, and in the stylobate of the western wall, seem to point, as he says, to an intimate connection with some once adjoining building on the west. The marks which have led other commentators to suppose a cross-wall subdividing the western half of the cella (which he assigns to Minerva Polias), close by the doors which connect with the north and south porticos, he believes to indicate the positions of a range of columns and entablatures which repeated the ordonnance of the western façade, but with open intercolumniations. These novel hypotheses were received with great interest by the members

present; and it was suggested that Mr. Fergusson should supplement his paper by a more detailed account of the architecture of the Erectheum. Mr. Woods, whose judgment in classical archæology carries great weight, expressed himself as convinced of the correctness of Mr. Fergusson's location of the Pandroseum; and the testimony to its reasonableness offered by so eminent an authority as Mr. Penrose is a considerable corroboration.

We mentioned some time ago that the *Academie des Inscriptions et Belles Lettres* had decreed the "Fould" prize for this year to Mr. Fergusson for his History of Architecture. As a counterpart to this we may now record that the council of the Royal Institute has recommended M. Viollet-le-Duc for the Royal Gold Medal of this year. The importance of M. Viollet-le-Duc's services to the profession has always been better recognized outside of his own country than in it, though he is one of the most patriotic of Frenchmen; and this action of his British brethren is a striking comment on that of his countrymen a short time ago, when they refused him a place in the *Institut* because he was a mediævalist.

Senator Morrill of Vermont, the chairman of the Senate Committee on Public Buildings and Grounds, and also the majority of the committee, are said to favor the demolition of the unfinished Washington Monument at Washington. They believe that if ever completed it would have but small claim to architectural beauty, but that a memorial arch decorated with statues and carvings representing the growth of the United States would be a more decorative feature in the national capital. We quite agree with the committee in their opinion of the monument, and should be glad to see some good and speedy use made of the material that may be quarried out of it; but we should be sorry to have the conception of its successor left to the committee.

THE REPORT ON THE NEW YORK STATE CAPITOL.

Early in 1875, the Legislature of New York, finding that the new State Capitol at Albany, which had been some years in building, and had only reached the floor of the principal story, had cost more than five million dollars; and that the estimate cost of finishing it, though based on incomplete drawings and specifications, was some seven million dollars more; and conceiving doubts, moreover, as the plan of the building developed itself in construction, whether it would prove to be satisfactorily arranged for its practical uses, — passed a resolve requiring that, before any more money was appropriated to the work, detailed plans and specifications for the completion of it should be laid before the Capitol Commission, and should receive their approval and indorsement. The Commission decided to call in an advisory board of experts, and to intrust them with the duty of critically examining the plans, suggesting what modifications it might be desirable to make in them, and of procuring careful estimates of the cost both of carrying out the existing designs, and of modifying and completing the building as might be suggested. Of the gentlemen selected as the Advisory Board, two were architects, — Messrs. Leopold Eidlitz and H. H. Richardson; the third, the chairman of the Board, Mr. F. L. Olmstead, was chosen for his experience and skill in the administration and economy of public works. The architect of the Capitol, Mr. Fuller, was requested to prepare full specifications and detail-drawings for a complete estimate of the cost of finishing his building, with such alterations as he thought best to make in the interest of economy.

The Advisory Board, organizing in last July, rendered their report to the Capitol Commission last Thursday. They examine the present design at length, and discuss in detail the requirements and proper character of the building, and present a series of drawings for a modified design, and bills of quantities with detailed estimates for these, and for the designs of the architect. The report begins with a review of the causes which led to calling in the Board, and a examination of some charges of negligence in superintendence on the part of the architect, which they find to be unsustained, and which they briefly dismiss with the remark that, "in view of the difficulty of carrying on such work at the present time and under our present political customs, and in the present condition of industry, the State must be thought fortunate if the Capitol presents no more extensive and serious marks of imperfect success in superintendence than are fairly borne witness to in these statements." After some criticism of the constructive treatment of certain parts of the building, the report passes on to an examination of the general disposition of the plan, and a detailed criticism of its leading features both of construction and decoration.

On these points the judgment of the Board is very decided. Their account is substantially as follows: The building is a large hollow rectangle, surrounding an open court. The four sides, or wings, are pierced longitudinally by central corridors twelve feet wide, running for the most part continuously from end to end, and with a range of rooms on each side. The corridors are therefore directly lighted only at the ends; and two of them are three hundred and forty feet long, each with only a single window at each extremity. The floors of the building are from twenty to twenty-seven feet apart: the width of the wings between walls is from eighty-six to one hundred and three feet; and the exterior is pierced by windows at regular intervals of about eighteen feet, which govern the subdivision of the interior; so that the building is essentially a cellular structure, in which "the normal unit of space is a room eighteen feet wide, twenty to twenty-five high, and at least thirty long, lighted by a single window at the end, and communicating with the rest of the building by a doorway opposite the window, opening into a dark passage." "Neither by subdividing such rooms, nor by throwing two together," says the report, "can much of their space be turned to good account for the ordinary work of legislative committees . . . or any other of the more common business of bureau officers or clerks."

There are two full stories thus arranged above ground, — one is called the basement, and the other the entrance-story, — before the principal story is reached, in which are the two legislative halls, extending quite across the wings, cutting off the corridors, and carried up through the third and fourth stories. The court of appeals similarly placed is but one story high. This regular and formal arrangement of rooms naturally excludes any distribution which could class them together in such groups as should facilitate the various uses to which they are to be put; and accordingly it appears that the committee-rooms, which are to be used in connection with the legislative halls, are distributed over four stories, seventeen of them being two stories below, with the executive offices, the court of appeals, and the State library between; and only four on the same floor as the halls. This floor is fifty-seven feet above the ground; and to reach the halls from the main entrance it will be necessary to journey nearly four hundred feet, climbing four flights of stairs, of fourteen feet high each, which are described as narrow and dimly lighted. Nevertheless, in view of the fact that the Capitol is already carried up to the third or principal floor, the Advisory Board argues that the great difficulty and expense of making any essential change in the arrangement of it at this stage, since it would involve tearing out and rebuilding almost the whole interior, is not possible; and they add that "The fact really is, that by no possibility could the accommodations which have been required to be provided for in

the new Capitol, be conveniently arranged on the ground plan of the present building."

The report then discusses the exterior design of the building, in the light of the received principles of harmony, subordination, and truthfulness of construction. It rebukes with some severity the use of cornices and other features of galvanized sheet-iron, in imitation of stone; and adds, "In nothing has the inclination to indulge in shams and makeshifts, and to substitute the coarse arts for the fine arts, been more manifest than in matters of building. Nothing would be more humiliating to the State than that the vulgar conceit which lies at the bottom of every thing of this kind should have place in the Capitol; and no more imperative duty rests on your Commission than to insist that only substantial, well-tried, and unmistakably genuine materials and workmanship shall enter into its construction, even if, in order to get them, the completion of the building is delayed for years. The State can afford to wait for better times. It cannot, after spending so much for soundness in the lower walls of its building, afford to fall back on cheap and showy stage-effects above."

After saying that the general form of the building has advantages for an imposing effect, based on an appreciation of its length, breadth, height, stability, and endurance, and that the regular and symmetrical distribution of piers and window-openings, of a nearly uniform size, is adapted to sustain and augment such an effect," the advisers go on to examine it in detail. They criticise the subdivision of the four fronts, which are broken each into five masses similarly disposed; they object to the sky-line as needlessly broken up, and the roofs as frittered away in unreasonable and incongruous complexity of detail. The upper stories of the building, which, containing the most important apartments, should be made the most important portions in the exterior, are criticised as inferior in treatment to those below them. Of the detail they say, "It will be found that the detail, seen by itself, might, in each case, be readily supposed to be designed for a quite different building, and that consequently it has a claim on the admiration of the observer in competition with, rather than in alliance to, that of all the rest. We submit that you should consider whether such a frequent change of motive is not again unfavorable to unity, repose, and dignity, and does not tend to fritter away the effect which might otherwise be expected to result from the general simplicity of outline and the magnitude of the essential body of the structure."

The chambers for the Senate and the Assembly are criticised for their situation, approach, proportions, and for their decoration, the material of the finish being chiefly cast iron and plaster. The lighting, ventilation, and acoustic adaptation are also disapproved. The placing, design, and structure of the dome are also blamed; the whole treatment and construction of the roof are objected to. It is elaborately framed in iron trusses, and is to consist of arches of artificial stone carried on iron beams and covered with copper: it is regarded as "cumbrous and costly beyond reason." The stairs of the building are condemned as cramped and undignified; the outer stairs of approach as inconvenient and even impracticable in their first design, and undignified and contracted in the modifications suggested by the architect.

The alterations which the Advisory Board propose for the design of the buildings are indicated by the plates which we publish to-day. The massing of the shorter fronts is changed by casting the five divisions into three; in the longer fronts, the roofs of the intermediate or receding parts are brought down one story, making these portions only three stories high, and relieving against them the corner pavilions and the legislative chambers. The windows, regularly spaced in the first two stories, are grouped into arcades in the upper and principal stories, which are further increased in importance by a greater richness of detail. The roofs, on the other hand, are thrown into much bolder and simpler masses; and the complicated mass of dormers, cornices and castings, and finials, greatly simplified and reduced. The dome is little changed in its proportion, but greatly modified in detail; the eight small spires are reduced to four, which group like pinnacles around the dome. It is proposed to build the dome of stone instead of iron and concrete; the interior, instead of being shut away as before, is to be decoratively treated; the cupola which crowns it is to be reached from within by a singularly bold double staircase, which, springing from two opposite points at the base of the dome, forms an arch below its soffit, and supports at the crown the spiral staircase which leads up to the cupola. The arrangement of the senate and assembly rooms is to be somewhat changed, and the flat iron ceilings replaced by vaulted ones supported by ribs and columns of stone. Considerable changes are proposed in the materials of both exterior and interior; chiefly substituting stone-work for iron, plaster, and wood. A new approach has been designed to the building; and changes are suggested by which the interior staircases may be made more commodious.

In 1874 the architect of the Capitol estimated the cost of finishing the building according to his designs at $7,886,000. Since then, up to December, 1875, $1,729,000 has been expended. Supposing the additional expenditure to have accorded with the estimate, this would leave over six millions to be still expended in carrying out the original design. This estimate did not include the cost of grading and fencing, decorative painting, or furnishing. The Advisory Board has prepared bills of quantities and careful estimates for finishing the work according to Mr. Fuller's intentions, and also according to the modifications which it proposes. Taking advantage of the recent fall in prices, and of the alterations in the architect's design suggested by himself, the Board has reduced the estimates for carrying out his design to something over four million eight hundred thousand dollars. The cost of completing the building according to their own modified design, the advisers estimate at about four and a half millions. The amount to be saved by the changes which the Board proposes — some three hundred and twenty-five thousand dollars — is a comparatively small matter in a building of such cost. The great advantage they propose to secure is in the character and quality of the work; the substitution of stone for a great amount of cast iron, sheet iron, plaster, and wood; and the gain in the solidity, durability, and dignity of the work. Thus the estimated cost of stone-work for finishing the old design is in round numbers 2,850,000 dollars; for the new, 3,125,000 dollars. This is offset by reducing the cost of the iron-work from $332,000 to $197,000; the brick-work, from $572,000 to $496,000; the saving of $130,000 in plastering, $155,000 in carpenter's work, $50,000 in the roof, and $30,000 in painting.

GOVERNMENT ARCHITECTURE AND GOVERNMENT ARCHITECTS.

READ BEFORE THE NINTH ANNUAL CONVENTION A. I. A.,

BY P. B. WIGHT, OF THE CHICAGO CHAPTER, FELLOW.

II.

WHAT meanwhile have the United States done during the century of their existence? Before answering that, let us briefly glance at the methods now followed in the leading countries of Europe, to foster and develop their government architecture.

In France the architects for new government buildings are selected after a free *concours*, or competition. The architects intrusted with the restoration of the cathedrals and other public monuments are appointed from those who are specially versed in such matters. They have the title of "Government Architect," which they are always proud to append to their names. There is one officer in each department entitled "Inspector of Fine Arts." There is no officer in France having the authority of a central government architect.

It is safe to say that the competitions for works at the French capital are generally decided in favor of the most meritorious designs, but the same does not always hold in the provinces. In one competition of recent occurrence for a new church at St. Denis, the award was made in favor of one of the worst designs submitted. In the restoration of ancient monuments and cathedrals, the assignments have always been made with wisdom and prudence. The largest part of this work has been done by that greatest of all archæologists and art-writers, Viollet-le-Duc, whose restorations of Notre Dame at Paris would alone place him in the highest position among modern architects, while his restoration of the Château de Pierrefonds will rank as one of the greatest works of the century. The restoration and enlargement of the Palais de Justice (with the exception of the Sainte Chapelle du Palais, which was restored by Viollet-le-Duc) was intrusted to a scarcely less eminent architect, M. L. Duc, of Duc & Dommey. A large part of this was again destroyed in 1871. The restorations and extensions of the Louvre not only harmonize with, but excel in architectural beauty, the old work of the same building. These are the work of M. Lefuel. The Grand Opera now completed was awarded by the Imperial Government to Garnier in competition. He was then a young man without reputation; but he has shown his ability to cope with the largest of undertakings, and now ranks with the best of his profession. Notwithstanding the unfavorable criticisms which have been heaped upon it by jealous contemporaries, it holds its own with the best work in the modern French style. On the whole, the competition system has succeeded better in France than elsewhere, and has brought to the front men of ability, who, under the circumstances usually surrounding a young practitioner in France, would otherwise have been scarcely known to the world.

The present occasion will not permit any further recital than a brief statement of the condition of government architecture in England, which is well known to most of us, who have been interested witnesses of the progress made by our profession in that country.

The erection of the Palace of Westminster, or Parliament Houses, was the first government work of importance undertaken during this century (unless we may except St. Thomas's Hospital), and thus far the greatest. It is the result of a competition thrown open to all British architects, and was erected under the direction and patronage of a parliamentary committee. The history of this important competition has so often been written, that I trust it is familiar to all of us. Suffice it to say that it was a very felicitous selection; and, whatever the growth of knowledge may have been within the few years since its erection, it will hold its own still in comparison with other piles of the greatest magnitude. Had that building not been erected, the magnificent designs submitted for the Law Courts a few years since, in which an amount of architectural talent was displayed that has never elsewhere been equalled, would never have been created. The success in the Parliament Houses gave an impetus to architectural competition in England which has resulted in some of the most mortifying abuses. The bane of these contests has in most cases been the submission of competitive designs to the decision of ignorant committees. This has in some cases been avoided by the appointment of expert examiners.

The restoration of the cathedrals and other mediæval monuments of England has, with more or less success, been intrusted to the leading architects of the Gothic school, the major part falling to the lot of George Gilbert Scott. But unfortunately in some cases the appointments have been controlled by those who have contributed the major part of the funds for the purpose; and the selection has thus been often made of ignorant and incompetent architects, or even of provincial builders who have simply destroyed with ruthless hand what they were sent to restore. Within the last fifteen years public buildings in England erected by order of parliament have sometimes been awarded to prominent architects, and in some cases the selection has been made in a limited competition. The Home Secretary's Offices were given to George Gilbert Scott; and it was a remarkable assignment, inasmuch as Lord Palmerston, then prime minister, who despised Gothic architecture, and was a patron of the classic or Italian style, had determined that the building should be in the Italian style. The leader of the Gothic school thus surrendered to state influence and patronage. He has, however, shown by his work that he was not unfitted for the ungracious task, and has produced one of the best works in the style. The Foreign Offices were committed to M. Digby Wyatt, and have been carried out in a compromise style, with partial success.

We are all aware of the steps taken to procure designs for the new Law Courts, whereby eight leading architects were invited to submit designs in a limited competition. This was the most remarkable competition since the building of the Houses of Parliament. All the designs were published; and after much delay and discussion a decision was reached, and was unsatisfactory both to the profession and the Government. Street and Barry were put on an equal footing so far as the award could be made; but after further delay Street was appointed architect of the building, and ordered to make a new design, which is now being carried out. The result of this competition cannot be considered a success: still there can be no doubt that the building now in course of erection will far surpass the Houses of Parliament, and will stand among the greatest monuments of the century.

Some years since, a commotion was made in the British architectural world by the appointment of one Ayrton, one of those utilitarian Gradgrinds with which the world is unfortunately infested, to the position of First Commissioner of Works. He set about to reform the architecture of his country, and to abolish architects, who he thought were the greatest impediments to the accomplishment of his pet scheme. He employed draughtsmen to draw and engineers to superintend public buildings, and succeeded in getting several monuments of his folly erected before his brief career was brought to a happy close. He erected, among other things, a city post-office in London which defied proportion, good taste, and art generally, the drawings for which were published in the English architectural journals. His impertinence served a good end. It aroused a spirit of *esprit-du-corps* among the English architects, and became a warning to the government not to attempt the degradation of an honorable profession. His treatment of Mr. Barry was resented by the whole body of British architects.

In provincial competitions, many English architects, as I have said, have been brought to the front, though illustrations are not wanting to show how ignorant committees have often made the most absurd decisions. Noticeable among the former is Alfred Waterhouse, whose two principal works, the Manchester Assize Courts, and the Town Hall in the same city, are the most successful works erected in England. The stumbling-block to architectural progress in England, as it has been in many other modern countries, has been the official authority of ignorant non-professional commissions. The want of a central authority, in the person of a man of high professional position, has always been felt. The best talent has been at the mercy of those who are incapable of deciding on such matters; but by the accident of official position, to which they are chosen for entirely different purposes, have had the vanity of ignorance, which has made them believe themselves to be arbiters of taste. The groundwork of this evil is in the very foundation of government, which does not draw a proper distinction between matters of utility, and the æsthetic needs of a community.

The history of government architecture in America is brief in point of time, but extensive in the amount of ground covered. It properly commences with the erection of our National Capitol, whose history is co-extensive with the history of our country, and affords a remarkable analogy to our political history. It can hardly yet be considered finished, and I doubt if it ever will be completed. It seems to be a reminder to us, that the problem of republican government, though nearly solved, is never completely elucidated to our satisfaction. Doubts are constantly arising in the minds of our most advanced thinkers. The very incompleteness of our system is the incentive to what I now write. And the problem arises before us to-day, "whether the development of the best art talent of the country, as shown in its public buildings, is possible."

Our National Capitol may be taken as a fair example of the progress made in government architecture up to within a few years. Its history is an interesting study, and I will not venture to trace it; for it has been ably and forcibly written, and appeared in the International Review of November, 1874, from the pen of James Q. Howard. I would advise every one interested in this subject, to read the article attentively. The original Capitol was commenced in 1792, and finished in 1830. It had five successive architects: Stephen Hallet, James Hoban, George Hadfield, Benjamin H. Latrobe, and Charles Bulfinch. There were only two, however, who had any thing to do with the designing of the building; and those were Stephen Hallet, a French architect, who designed all the work done up to 1803, and Latrobe, who was then appointed. Latrobe carried along the work until the war of 1812; and after the war, the building having been nearly destroyed, Latrobe practically rebuilt it, and modified the design, leaving it as it was when Mr. Walter undertook the erection of the wings and new dome. But

New State Capitol at Albany.

General Perspective View, Showing the Proposed Alterations.

Heliotype.

James R. Osgood & Co., Boston.

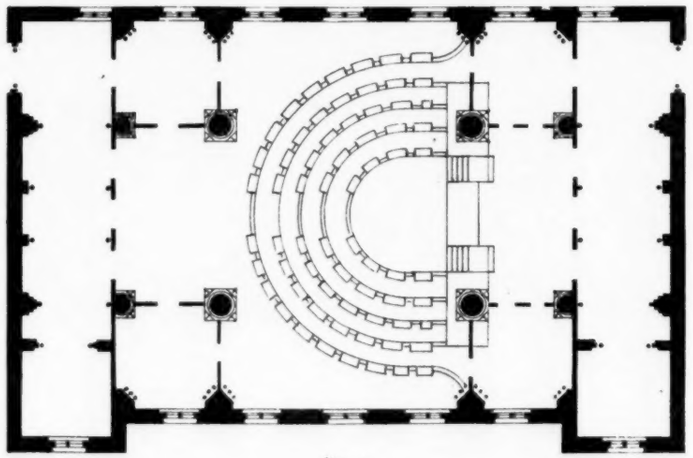


Fig. 1.

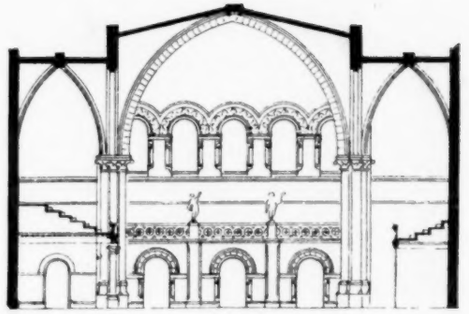


Fig. 2.

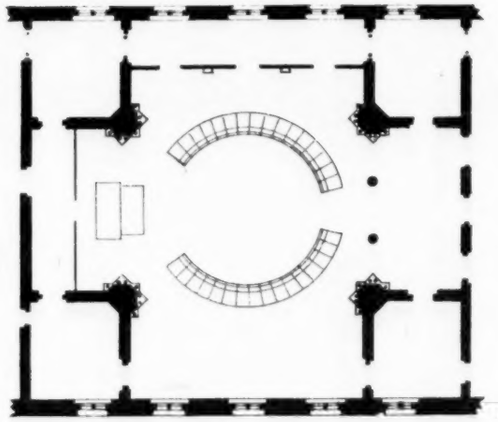


Fig. 3.

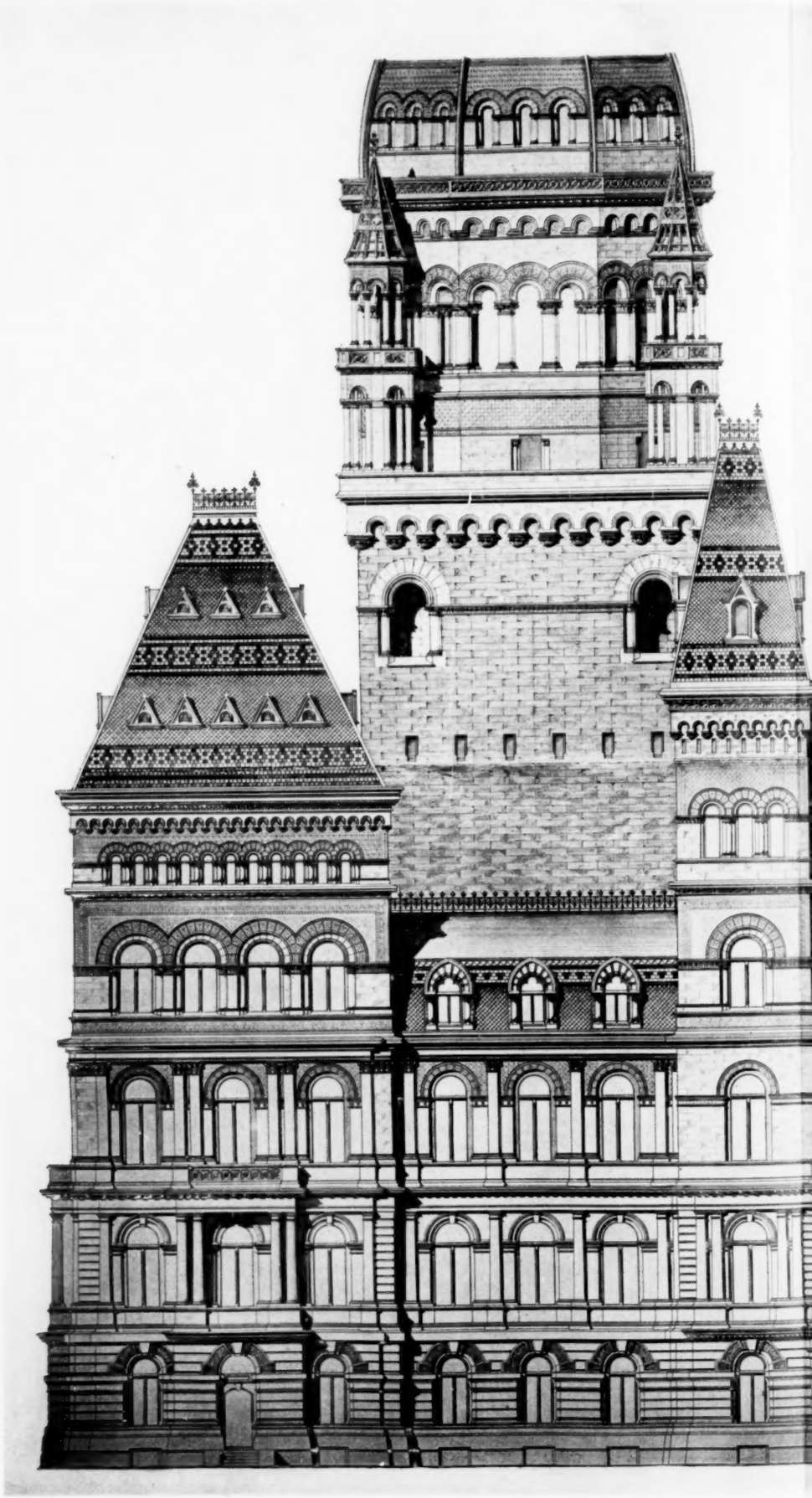
Legend.

Fig. 1.—Ground Plan of Assembly Chamber.
Fig. 2.—Longitudinal Section of Senate Chamber.
Fig. 3.—Ground Plan of Senate Chamber.

The New State Capitol at Albany.

Heliotype.

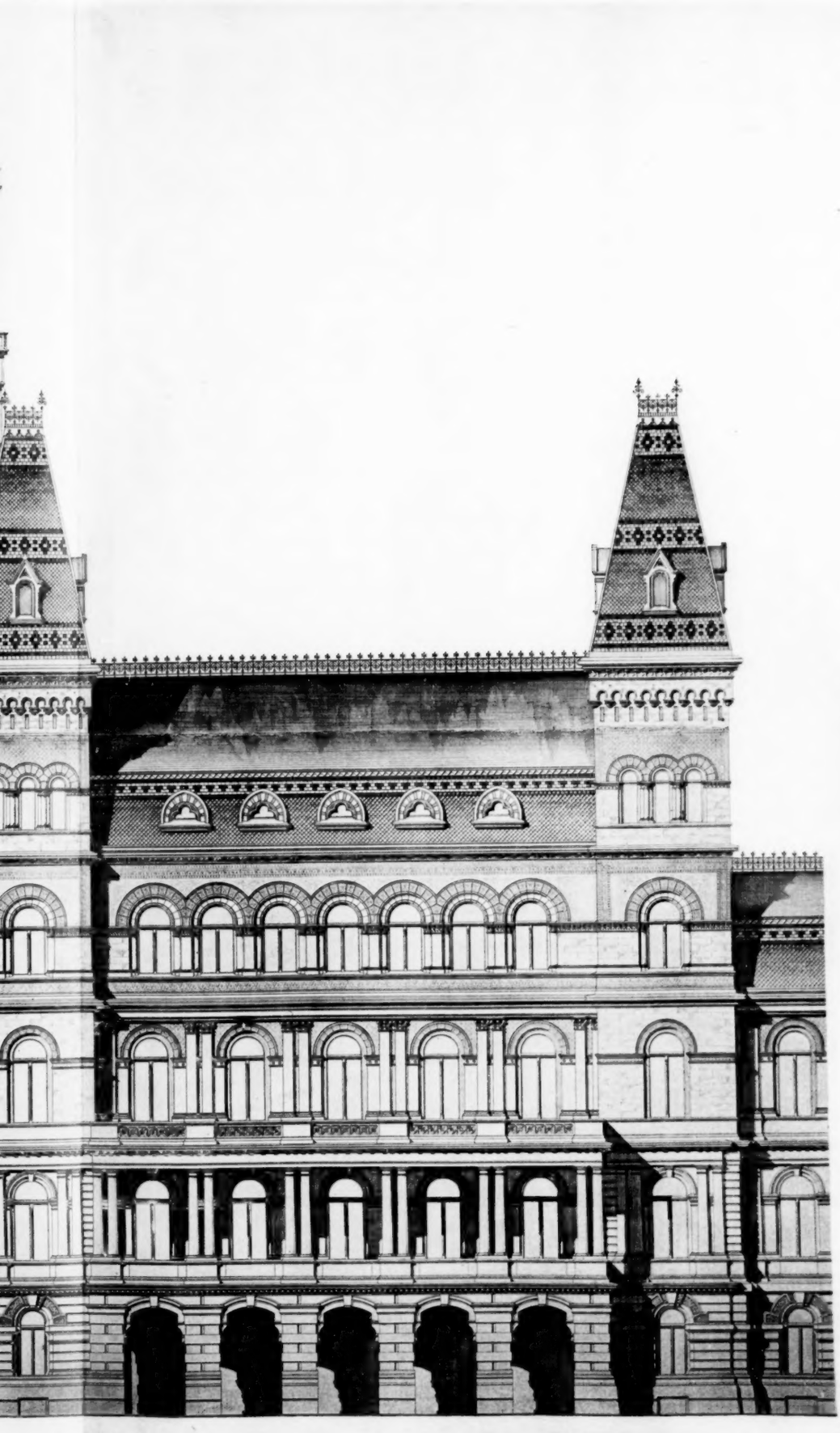
James R. Osgood & Co., Boston.



The New State Cap

Detail of Later

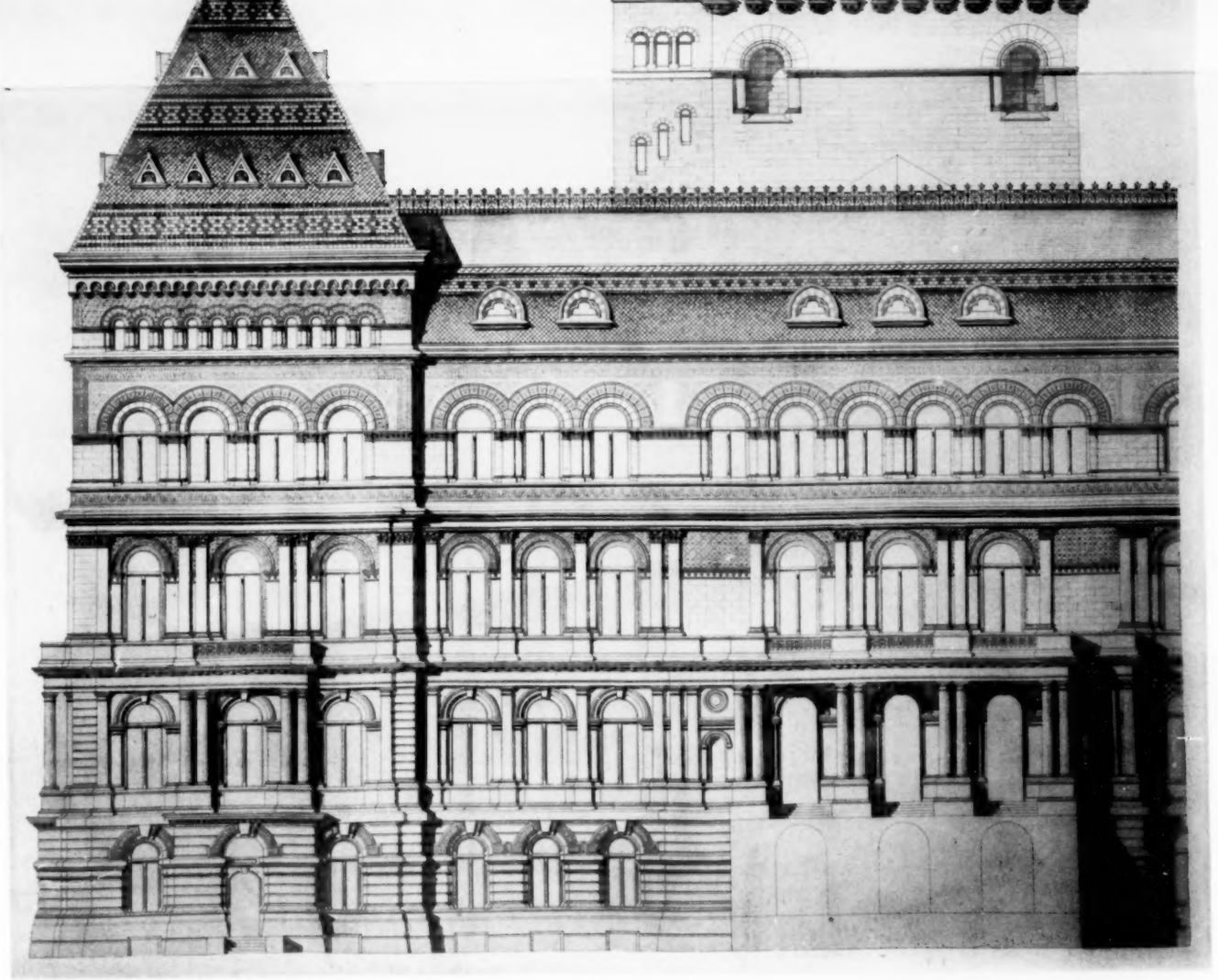
Heilotype.



TATE CAPITOL AT ALBANY,

L OF LATERAL ELEVATION.

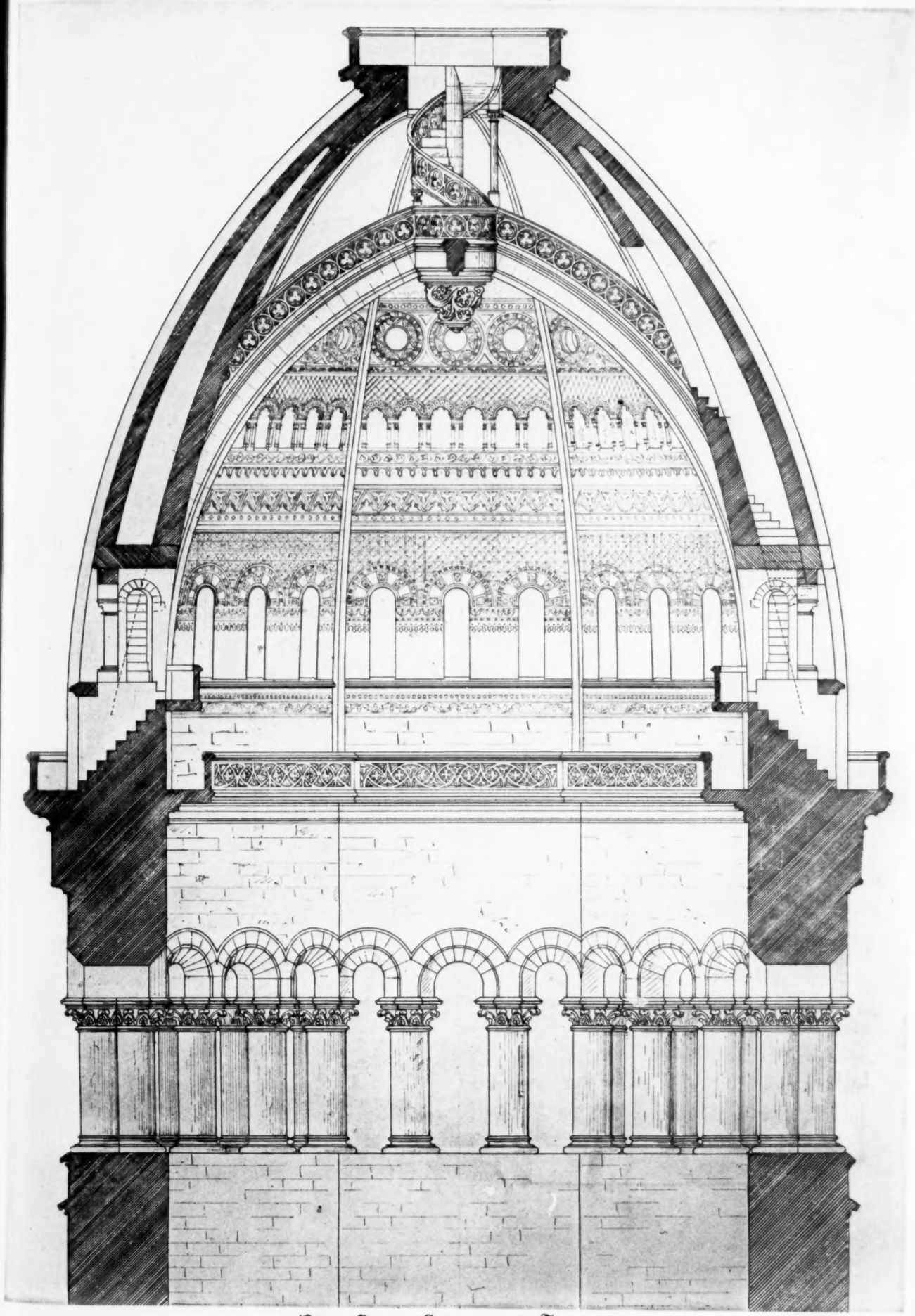
JAMES R. OSGOOD & Co., BOSTON.



NEW STATE CAPITOL AT ALBANY.

DETAIL OF FRONT ELEVATION, SHOWING PROPOSED DOME.

HELIOTYPE. JAMES R. OSGOOD & CO., BOSTON.



NEW STATE CAPITOL AT ALBANY.

SECTION THROUGH THE PROPOSED DOME.

HELIOTYPE. JAMES R. OSGOOD & CO., BOSTON.

before all these architects undertook the work there had been a competition for a prize of five hundred dollars, and this had been awarded to William Thornton of Philadelphia, a physician. This, however, was thrown aside as impracticable; and Hallet, who seems to have been the only architect that submitted a design, was appointed architect. Hallet was discharged by the commissioners two years after, because he had too much professional pride to submit to the authority of a superintendent of public buildings, named James Hoban, who was placed in authority over him by the commissioners. He held on to his drawings, however, and gave much trouble. In this he established good professional usage. If it is designed to have saints in the architectural calendar, I think it would not be a bad idea to put Hallet at the head of the list.

Hoban was then put in charge as architect. And soon George Hadfield, an accomplished architect, was placed *under* him, and held the position from 1795 to 1798. Hadfield was also discharged, because the autocrat Hoban quarrelled with him. Benjamin H. Latrobe was appointed architect in 1803, and worked untrammelled for many years. But even he was obliged to retire after thirteen years' faithful service, on account of the appointment of a non-professional commissioner without taste or capacity, to whose dictation his self-respect would not suffer him to submit. Charles Bulfinch was architect from 1817 to 1830, during which time he simply carried out Latrobe's plans, though he also was an architect of ability.

Nothing further was done to the Capitol until 1851, when our worthy and venerable vice-president, Thomas U. Walter, was appointed architect, his plans for the extensions to the building having been adopted in competition after an advertisement by a select committee of the United States Senate. We are all familiar with the history of Mr. Walter's connection with this important work. His work was practically finished in 1865, the original work being quite insignificant in comparison with extensions, and the mighty dome which crowns the whole structure. His former pupil, Mr. Edward Clark, continues as architect in charge of the building. The great time consumed in the erection of this structure seems wonderful for this age; but its history is a long and complicated one, and to any one acquainted with the difficulties in the way of the progress of the works it is not hard to understand. The principal difficulty in the way of harmonious progress has almost always been the intermeddling of ignorant and officious commissioners, and the periodical disposition of those in authority to interfere with the legitimate professional duties of the architect, by placing in authority over him superintendents, engineers, or commissioners who had no sympathy with the profession, or disposition to respect the proper office of the architect as that of head of the works.

The above is but a faint outline of the facts connected with the history of this remarkable structure. I might select other government buildings whose history, though shorter, would be similar.

THE ILLUSTRATIONS.

THE NEW STATE CAPITOL AT ALBANY.

We give up this number to illustrations of the designs of the Advisory Board for the completion of the Capitol at Albany. The drawings which we copy represent a general perspective view, two partial elevations of the longer and shorter fronts of the building, and a section of the dome. They are printed from gelatine, it appearing that they could not be satisfactorily transferred to stone.

THE HABITATIONS OF MAN IN ALL AGES.

BY VIOLLET-LE-DUC.

III. — The Delta of the Nile.

The inhabitants of that part of the river above the Delta, who live in a narrow valley bounded by chains of hills of limestone or sandstone, and destitute of fertile marshes filled with those useful reeds which serve also for food, dwell in grottos formed by nature, or hollowed out in the sides of the hills. These men subsist by fishing and the chase, and on spelt, which is cultivated along the banks of the river. Bolder and more robust than the inhabitants of the lowlands, it is they who struggle against the black race when the latter attempt to descend the course of the river. They seem, however, to be of the same origin as their neighbors of the Delta, though they are taller, and darker in complexion, more enterprising, active, and independent.

We will describe how the inhabitants of the Delta build their houses, which are by no means capacious; for they live habitually in the open air, and scarcely remain in their dwellings except to sleep.

When, therefore, an inhabitant of the Delta has selected the site he judges suitable for erecting his dwelling, he has the ground plan marked out by those who are intrusted with building operations, and who form a corporate body. Then they lay in a store of bundles of canes and reeds called byblos and lotus, and form a heap of clay, which they temper with water, and mix with spelt straw; and of this they form bricks that are quickly dried in the sun.

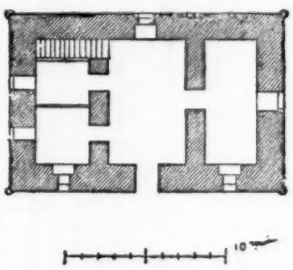


Fig. 24.

Houses of the common sort consist of a principal apartment, about eight cubits wide (fig. 24)[1] by fourteen long; a second narrower room six cubits wide, the length being the same; and two small apartments serving for bed-chambers, six cubits wide and as many long, separated by a partition less in height than the apartment. A wooden stair on the inside gives access to the terrace. The walls are thick, and this is how they are built: —

When the plan has been marked out, as shown in fig. 24, they prepare bundles of canes and lotus. These reeds are carefully fastened together by bonds of byblos, and thus form a kind of post whose length corresponds with the height intended to be given to the building, which is scarcely greater than from seven to eight cubits from the ground to the upper terrace. First they fix the strongest bundles at the four external angles of the house (fig 25). Other bundles are fixed at the internal angles so as to be vertical. These external and internal bundles are fastened together by ties of byblos. The four angles being thus prepared, set up and kept in place by stays, bundles of canes are laid horizontally, so as to bind together the heads of the external posts at the four sides; and these horizontal bundles are relieved in their bearing by intermediate vertical reeds, between which are contrived the openings that

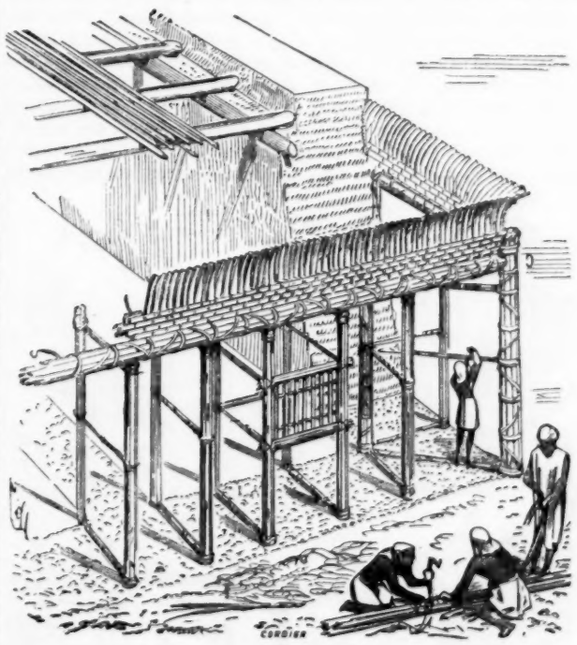


Fig. 25.

will form the doors and windows. These external vertical reeds are tied to other internal posts made of reeds. Then the laborers engaged in tempering the clay set to work, building the reeds in the walls, except the external vertical ones at the angles and the horizontal crowning, which thus serve as setting-out stakes and guides for raising the walls. When these have reached the level c, they place on the large horizontal bundle a sort of trellis-work of reeds prepared beforehand, as shown in fig. 26, and which is composed of a double row of reeds, between which other reeds placed very

[1] The Egyptian cubit is 20.6422153 inches.

close are kept in a perpendicular position by means of plaited bonds of byblos. This trellis-work is kept vertical by other bonds which fasten the lower parts of the stalks of the reeds that form the trellis-work to the inside of the large horizontal roll above as

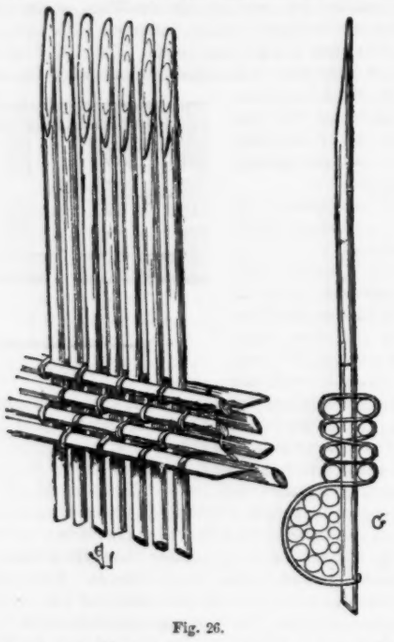


Fig. 26.

at G. Then the clay-workers continue their work behind this trellis, and ramming their clay they give a bend outwards to the ends of the reeds, so as to form a slightly projecting cornice. These reeds keep the clay thus rammed projecting, and allow the curve to be terminated by a flat fillet which gives the level of the terrace. The workmen, who are patient and careful, execute these works very neatly, raising the clay on inclined planes. When the inner and outer walls are thus raised to their intended height, they place trunks of palm-trees, cypress, or sycamore on the top of the walls, according to the width of the rooms; then, on these trunks, reeds; then clay gently rammed so as to form the upper platform, plastered with the same clay kneaded with straw; and the heavier part of the work is thus completed. For the jambs and lintels of the doors and windows, they make use of reeds in the humbler dwell-

Fig. 27.

ings, and palm-trunks in those of more pretension. Fig. 27 presents one of these habitations selected from among the higher class.

The dwellings of those who live above the Delta differ in every respect from those we have just described. On the sides of the rocky hills which border the banks of the river, there are natural grottos in which these men originally took up their abode. But when the population increased it was necessary to hollow out excavations in default of natural caves.

These dwellings — we speak of the more recent, those hollowed out by human hands — generally present, in plan, the arrangement shown in fig. 28.

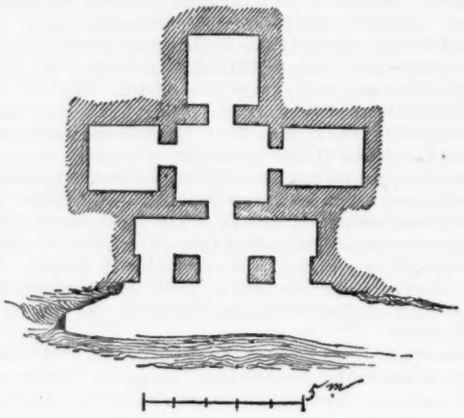


Fig. 28.

Taking advantage of a natural ledge on the sides of the hill, they hollowed out a kind of porch, with one or two pillars left in the solid. At the back of the porch a doorway is pierced, giving entrance to several small chambers excavated at right angles to each other.

The entrances to these habitations present an exterior such as is here depicted (fig. 29), appearing at a distance suspended along

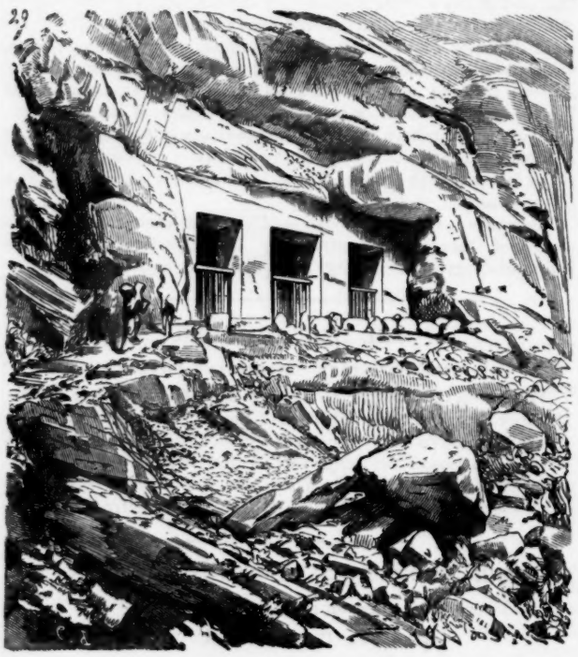


Fig. 29.

the escarpments. These dwellings dug in the sandstone or limestone are very dry, as the hills contain no springs, and the sky is always clear.

IT has been decided to light all the waiting and baggage rooms of the principal railroad-stations in Paris by electric light. The Graham machine, when worked with three horse power, is said to give as much light as can be obtained from a hundred gas-lights. The electric lantern, at a height of ten metres from the ground, sheds a soft, clear light over an area of twenty thousand square feet.

CORRESPONDENCE.

NEW YORK, Feb. 28, 1876.

MR. RENWICK of New York has prepared the design for a block of office buildings in Washington, to be built entirely of brick. These are of Baltimore and Washington manufacture in different colors; and a novel use is made of the material by submitting it to the chisel in the working-out of the ornament. The window-lintels, belt-courses, and other prominent features, are cut precisely as though they were of freestone. The fine-grained brick, it is found, cuts to a good face; and the work is more spirited and artistic than the tame moulded work, where burnt clay is used otherwise than in the usual shape of brick. In the construction of fire-proof buildings, where it is desired to use brick to the exclusion of sandstone, granite, or other material, Mr. Renwick's idea of cut brick-work may give to the profession a thoroughly artistic treatment of a really serviceable material.

Among the buildings at the Centennial exhibition, the newspaper offices will form an interesting group. The number of journals which have made application for space has been very large, including not only metropolitan papers, but Eastern and Western publications as well. The Graphic will have a studio and a printing establishment. The New York Tribune has been taking the initiatory steps towards the erection of a small office building, and others of the daily press are falling into line. These will be mainly depots for the collection of news, serving as headquarters for the special correspondents at the exhibition.

THE QUESTION OF WOODEN VAULTING.

TO THE EDITOR OF THE AMERICAN ARCHITECT.

Sir, — In your paper of Feb. 12, you were good enough to afford me space to defend the use of wooden vaulting in the vestibule of the Harvard Memorial Hall, this feature having received a public rebuke at the hands of the critic of the New York World, as "nonsensical," "entirely without excuse," and an offence against the teachings of M. Viollet-le-Duc.

This critic, in your paper of Feb. 26, replying to my arguments, summarized my remarks as follows: 1. The system of vaulting in wood, as employed in this example, was practised by mediæval architects: 2. A vaulted ceiling is "a mere matter of decoration" [and not amenable to the laws which govern the constructive features of a building]. 3. The vaulted ceiling in question will nevertheless bear being judged by those laws, and is æsthetically and constructively correct. This summary, with the exception of the passage in brackets, I accept. "*The Critic of Memorial Hall*" proceeds to take exception to these points in turn.

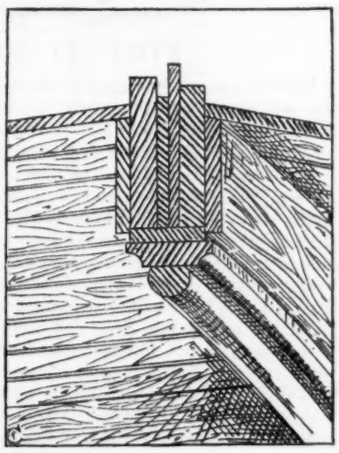
1st, Having been enlightened as to the teachings of M. Viollet-le-Duc, who states that English vaulting "admits, nay more, suggests," a construction in wood, and having been informed by various citations as to the frequent and conspicuous use of this method of making ceilings by the English mediæval builders, the critic frankly abandons this part of his position with the remark, "If people did such things in the middle ages, so much the worse for the middle ages." It would be easy to refer to other examples both in England and on the Continent, but under the circumstances this would seem to be a work of supererogation; yet I venture to commend a careful study of the exhaustive essay on vaulting by the master to whom he referred me, that he may discover the "rational processes" out of which may issue that system of wooden vaulting to which he so much objects.

2d, My remark that vaulting is "a mere matter of decoration" is met by the critic with a familiar quotation from Fergusson to the effect that the necessity for a stone roof was a controlling element in the development of mediæval forms; and by my friend and your correspondent, Mr. Derby, with the statement of certain practical uses in vaulting, especially its fire-proof quality. The obvious monumental advantage of greater durability in the stone vault I have taken occasion to acknowledge, although *cela va sans dire*. It is an advantage great enough to justify that amazing display of forces in equilibrium which is the leading characteristic of the greater mediæval buildings. But it remains true that this vaulting is not an indispensable necessity in the sense that the roof and walls are indispensable; and that therefore, although a derivative of the concrete vault of the Romans, which was also a roof, it is a feature of decoration — a ceiling — whether fire-proof or not, especially proper for use in a position like that under the tower of Memorial Hall, where there is neither roof nor floor overhead to supply more directly a *motif* for treatment. It is important to note, however, that there is nothing in my communication to justify the inference drawn for me by the critic, that, being "a mere matter of decoration," vaulting is not amenable to the laws which govern the constructive features of a building.

A construction in any material which pretends to be what it is not, as a painted lath-and-plaster vault, is base; a construction in any material which is not suited to its natural capacities is a thing which no true artist will undertake save under exceptional pressure of circumstance, and even then in a spirit of deprecation. This acknowledgment, I trust, will show that I am not insensible to one or two of the primary virtues of the architectural character.

3d, But the principal point of objection is contained in the final specification. He objects *in toto* to the wooden arch; for he is intelligent enough to perceive that, if he accepts this feature, the wagon vault and the quadripartite vault, constructed of straight boarding resting upon such arches, must logically follow, and his whole argument must fall to the ground. Among engineers and carpenters and bridge-builders, practical men, not apt to entertain theories of æsthetics or to be turned aside from economic construction by questions of decoration, arches built up with several thicknesses of planks breaking joint and bolted together, are among the common expedients of the craft.

See method of constructing timber bridges proposed by Price in his Treatise on Carpentry (Gwilt, §§ 2098, 2099); also Philibert Delorme on the construction of wooden ribs for domes in his *Nouvelles Inventions pour bien bâtir à petits Frais*, Paris, 1561 (Gwilt, §§ 2051, 2052), a method used in the building for the Exhibition of 1862; also Viollet-le-Duc, Dictionnaire Raissonné, article "*Charpente*," wherein the construction of curved ribs and braces is fully set forth. In further illustration of this method of construction, I beg you, Mr. Editor, to insert this section of the ribs of the Memorial Hall vaulting.



My critic will thus discover that the nature of wood is not inconsistent with the arch-form. He will find, moreover, curved ribs and braces constantly reproduced in the open timber construction of the middle ages. He will find in English vaulting of stone, long ribs not built up with voussoirs, but cut out of single pieces, and resting on their ends like beams of wood. He will perceive that there happen to exist in architecture certain forms equally well adapted to wood or stone; that the priority of use in either material is merely a curious question of archæology with which we have little concern. He will remember that in history traditions of construction in one material are constantly expressed and developed in another; that the forms of Egyptian masonry are derived from constructions in mud or clay; that Greek temples, according to the familiar theory, take their origin from wooden huts; and, in short, that the human mind is so constituted, that, even among the most artistic nations, the development of form is inextricably associated with tradition. The processes of invention proceed in great measure by derivation from precedents of all kinds. These facts are not inconsistent with the idea of constructive truth which underlies all good architecture.

If my friend will take the trouble to ascend with me to the space above the wooden vaulting of the Memorial vestibule, I shall be happy to show him, that, whatever its errors of design may be, there are no hidden expedients of construction; that there is a due economy of material, and that the whole mass is a firm, homogeneous, and intelligent combination of parts. Viewing the construction from below, he will see that there is no attempt at deceit, and that the construction is undeniably one of unpainted wood. Pray let him bear in mind that I do not assert that all forms of vaulting may be constructed in wood; but that the highest authority has distinctly proved, that certain forms of vaulting are at least as consistent with combinations of wood as of stone, and that it is from these types that the ceiling in question has been composed. It is not to be expected that the engineer, whom the critic

would summon to make a wood ceiling for this room, would produce such forms as now exist there; because an engineer is not an architect, is unfamiliar with precedents of decorative construction, and works with an entirely different impulse. But I should be content to refer the ceiling as it stands to his engineer, if competent, and to abide by the results of his calculations as to whether the material there is used according to its natural capacities.

I have observed a tendency to dogmatic assertion, and to the laying down of absolute rules, in modern architectural criticism, which is the direct result of literary and unscientific meddling. There are few ingenuous students of our art who have not at some time or other been affected by the eloquent spells of these bigoted purists. It is quite time that the artist himself, whose familiar studies are in regions inaccessible to the amateur, and who uses forms with the freedom which comes from inspiration and conviction, should break loose from the narrow formulas laid down for his guidance, by men who cannot sympathize with or comprehend his motives of action. His observance of principles is intelligent and not mechanical. He does not suffer his thoughts to be placed in unnecessary bondage to them. For further illustration, I beg leave to refer the "critic of Memorial Hall" to a most excellent English work, too little known, "Lectures on Art" by F. W. Moody, and more especially to the chapter therein contained, entitled "Truth of Material." HENRY VAN BRUNT.

NOTES AND CLIPPINGS.

MOST of our readers know of the new Roman Catholic Cathedral which is now building on Fifth Avenue, New York, from Mr. Renwick's designs, and which is the largest and most important piece of church architecture yet undertaken in the United States.

The present condition of the work is as follows: all the walls are completed, and the slating and copper work of the roofs are nearly done. The battlements and pinnacles are finished, with the exception of those upon the two transept fronts and over the side aisles. The towers and spires are incomplete, but with these exceptions the whole exterior is nearly finished. The marble work for such parts of the exterior as are necessary for the security of the roof is now being cut, namely, the third stories of the two western towers, and the pinnacles and ornaments of the three great gables. This work will be completed this winter, and will be set during the coming spring. The interior finish is already partly contracted for, and it is hoped that the building will be sufficiently completed for the celebration of the church services in about two years. The towers and spires will be continued after the consecration of the cathedral.

All the stained glass windows of the side-aisles, transepts, and sanctuary are to be memorial or gift windows, for which the contracts are already made; some of them are done, and have been sent to this country. Some are the work of M. Nicholas Lorin of Chartres, who has a very high reputation, and received a gold medal at the late exposition at Caen; and some of M. Henri Ely of Nantes, who has also executed some fine windows. The contracts for the eighteen clerestory windows are not yet made. These windows are to be filled with stained and grisaille glass in geometric patterns, and are to be made in this country. The high altar, the altar of the Blessed Virgin, and the cardinal's throne are nearly completed. The plans for heating and ventilation will soon be placed in the hands of the estimators. With the above exceptions, all the work necessary for the completion of the cathedral is already contracted for.

THE SCIENTIFIC MONTHLY is a new publication edited by Mr. E. H. Fitch, and published at Toledo by the Blade Printing and Paper Company. It is issued in a small neat octavo of fifty pages or so, and concerns itself mainly with the natural sciences. The February number, which has been sent to us, contains a number of articles, ornithological, quasi-botanical, and meteorological, written in a style which shows that they are intended for popular rather than for strictly scientific reading. The plates of birds given with this number are wood cuts, no doubt sufficient for their purpose, but without pretence to much interest as drawings.

THE Chicago artists, feeling the need of union and of mutual protection, have formed themselves into a society which, although not yet fully organized, already bears the name of "The Associated Artists." Rooms have been taken, and an art gallery opened, where are to be exposed only such works of local or outside artists as shall have satisfied the conditions of the committee. It is hoped that this gallery will become the headquarters for art, in the city at all events; and that the public will recognize it as the proper market where works of real merit only are exposed for sale.

PAINTED glass windows, when imported for religious societies, were formerly admitted into the United States free of duty, under a provision in Section 23, Act of March 2, 1861, which specified all societies "incorporated or established for philosophical, literary, or religious purposes." In the Revised Statutes of 1874, the word "religious" was dropped; but by a decision of the department of Nov. 11, 1874, certain painted glass windows were admitted on a duty of ten per cent *ad valorem* under Schedule M, as "paintings not otherwise provided for." This decision was, however, overruled on May 10, 1875, on the ground that "paintings on glass" were provided for in Schedule B, and therefore could not come under Schedule M, and that they should henceforth be assessed at a rate of forty per cent *ad valorem*, which is at present the established rate.

Before the last decision, the Old South Church of Boston had ordered some painted glass which did not arrive until after the decision of Nov. 11, 1874, had been overruled. The request that it should be assessed at the lower rate in consideration of the time at which it was ordered, was denied for the reasons, among others, that the decisions take effect from the time of their promulgation, and that to grant the request would constitute a precedent that would lead to the refunding of a great amount of money, and tend to unsettle the business of the customs department.

THE largest ice-house known is in Brussels, Belgium, the roof covering an area of 18,000 square feet. The walls are double, and filled in with moss and sawdust. There are nine separate ice-chambers, each one of 30,000 cubic feet capacity. The temperature never exceeds 36½° Fahrenheit. There are galleries set apart for the storing of meat in hot weather, capable of hanging 2,000 quarters, and having them perfectly isolated. A million tons of ice have been stored in the building at one time. — *Manufacturer and Builder.*

AT a meeting of the American Archæological Society of Rome, Jan. 3, Mr. Parker exhibited a drawing of the arch which is commonly known by the name of the "Porta Fontinalis." This arch, or doorway, which is now a part of the cellar of the villa of Cardinal Antonelli, is probably near the site of the true gateway in the wall of the kings. There were formerly two of these arches, about ten feet apart; one was destroyed by the workmen. Mr. Parker showed that the arch could not have been a gate in the wall of Servius Tullius or any of the earlier kings, for these reasons: The wall of this arch is only three feet thick, while the fortification-wall of the time of the kings was twelve feet thick; it has been rebuilt of old materials; the jambs and the arch are built of different stone; the walls of the kings are all built upon the solid tufa rock, while this arch is built upon a bed of concrete. A brick arch of the time of Constantine, thrown over the arch of tufa, supports the weight of a house-wall above, and indicates that the builders were afraid of the soft tufa. Near by, though not in the same line, and on a much higher level, is a portion of the original fortification of the Quirinal Hill. On the other side of this wall is part of the pavement of a street made in the inner fosse, with a drain beyond it. The old wall on the cliff above forms an angle at this point, on one side of which are the two arches, and on the other the jamb of another doorway of the time of the kings, which appears to have been untouched. Possibly this is the jamb of the true Porta Fontinalis, and the materials used in constructing the two arches may have been obtained from the missing portions of the gate. The two arches were perhaps entrances into the thermæ of Constantine, the remains of which, in the Colonna Gardens, are not far off. The brick walls of these thermæ are built upon a stone wall of the time of the kings. This using of the solid old walls of the kings as foundations for more recent structures is far from uncommon.

THE Zoölogical Society of Philadelphia have opened a new restaurant upon the exhibition grounds. The building is of stone, thirty-two by sixty-two feet. A porch twenty-two feet wide surrounds it upon three sides, projecting from which are four bay-windows, each eight by twelve feet. It is lighted by stained glass windows under the eaves. The roof is divided into panels, painted in brilliant colors upon a blue ground. Storeroom, kitchen, and other accessories are in an adjoining extension.